were associated with increased ACC CBF (q=.021). NSI somatic-sensory subscale scores were not associated with ROI CBF.
Conclusions: Results demonstrate that in TBI-susceptible anterior ROIs, alterations in CBF but not cortical thickness are associated with postconcussive symptomatology in Veterans with a history of mTBI. Specifically, postconcussive total symptoms as well as affective, cognitive, and vestibular subscale symptoms were strongly linked primarily to CBF of frontal regions. Remarkably, these results indicate that enduring symptoms in generally younger samples of Veterans with head injury histories may be closely tied to cerebrovascular function rather than brain structure changes. These findings may provide a neurological basis for negative clinical outcomes (e.g., enduring PCS and poor quality of life) that is frequently reported by many individuals following mTBI. Future work is needed to examine unique effects of blast exposure as well as associations with repeated injury on brain-behavior relationships.

Categories: Concussion/Mild TBI (Adult)
Keyword 1: cerebral blood flow
Keyword 2: brain structure
Keyword 3: concussion/ mild traumatic brain injury
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49 Longitudinal White Matter Changes in First Time Mild Traumatic Brain Injury in Relationship with Cognitive Performance: A Diffusion Tensor Imaging Study

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Objective: The objective of the study was to examine longitudinal changes in the white matter tracts with diffusion tensor imaging (DTI), neuropsychological performance, and the associate between the two in adults with a mild traumatic brain injury (mTBI).
Participants and Methods: Sixteen adult patients (age = 38.5(12.8); 75% female) seeking medical care at an emergency department for their first mTBI and 15 healthy adults (age = 30.5(11.3); 33% female) from the community were recruited. DTI and the neuropsychological evaluation were performed at 7 days and 4-months post-injury. The neuropsychological evaluation consisted of the CNS Vital Signs computerized neurocognitive test battery and 2 trials of the Paced Auditory Serial-Addition Test.
Results: Results showed a significant decrease in fractional anisotropy (FA) and an increase in radial diffusivity (RD) of the right uncinate fasciculus as well as a significant decrease in FA and axial diffusivity (AD) of the right inferior fronto-occipital fasciculus over the 4-month follow-up period in the mTBI group compared to the Control group.
The FA of multiple white matter tracts at baseline were positively associated with working memory, sustained attention, and complex attention at baseline in the mTBI group but not the Control group.
The global mean cerebral diffusivity for FA at baseline was positively associated with working memory and sustained attention at 4-months post-injury.
Conclusions: The current findings of abnormal white matter suggest an oxidative stress reaction as a result of mTBI altering the diffusivity of some white matter tracts. Furthermore, the disruption of the white matter tracts at baseline may serve as a biomarker for identifying mTBI and those who may have prolonged cognitive difficulties in working memory and attention as a result of the mTBI.

Categories: Concussion/Mild TBI (Adult)
Keyword 1: concussion/ mild traumatic brain injury
Keyword 2: neuroimaging: structural
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50 Sex differences in psychological features in adolescents after concussion

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Objective: Few concussion studies have investigated the psychological domain of concussions. Of the 22 postconcussion symptoms assessed on the Graded Symptom Checklist of the SCAT-5, five do not overlap with core symptoms of anxiety and depression. 43% of patients report at least one psychiatric symptom, the median is four after injury. Previous studies focus on total scores and not individual items; furthermore, few consider resilience as part of psychological factors that impact recovery. This research aims to describe general and specific characteristics of psychological functioning in males/females ages 12-18 after concussion to help guide treatment. We compared total scores for each measure between males/females and looked at the differences between the genders for individual items in each measure.
Participants and Methods: Participants were evaluated at an outpatient concussion clinic participating in the North Texas Concussion Registry (ConTex; N=1238, 53% female, mean age=15.4 years, SD=1.16 years). The Generalized Anxiety Disorder 7-item Scale (GAD-7, the Patient Health Questionnaire-8 (PHQ-8), the Brief Resilience Scale (BRS), and the Pittsburgh Sleep Quality Index (PSQI) were used to determine levels of anxiety, depression, resilience, and sleep quality.
Results: Utilizing Mann-Whitney U tests (median, interquartile range) to examine group distributions for the GAD-7, PHQ-8, and BRS, females had significantly higher scores than males for the GAD ($p<0.001$; Female: 4, 1-9 v. Male: 2, 0-5) and PHQ ($p<0.001$; Female: 5, 2-10 v. Male: 3, 1-7). For the BRS, total scores for females were significantly lower than males ($p<0.001$; Female: 3.67, 3-4 v. Male: 3.83, 3.21-4.33). The PSQI media score was significantly different between males and females: item 2, $p=.016$ and item 4 $p=.007$ using an exact sampling distribution for U. Pearson Chi square tests were used to examine sex differences for each item of the psychological measures. Items 1-7 within the GAD-7 were significant between sexes (i.e. male or female). The seven items assess (1) Feelings of nervousness, (2) Inability to stop/control worry, (3) Worrying too much about different things, (4) Trouble relaxing, (5) Inability to sit still due to restlessness, (6) Irritability, and (7) Feeling afraid. Items 2-8 within the PHQ were significant between sexes. The items assess (2) Feeling down/depressed/hopeless, (3) Trouble falling/staying asleep, (4) Feeling tired/no energy, (5) Appetite changes, (6) Lowered/poor self-esteem, (7) Concentration issues, and (8) Feeling slowed down or unable to be still. There was a statistically significant difference between genders and Items 2 and 4 within the BRS were significant between sexes. The items assess (2) Difficulty surviving hard times and (4) Difficulty snapping back from something bad.
Conclusions: Like other studies, this study found females have higher levels of negative affect (i.e., depressive and anxious symptoms). Females displayed lower resilience and reported poorer sleep. By analyzing psychiatric measures, treatment protocols can be tailored to address specific problems, and mental health difficulties can be mitigated by teaching specific coping techniques. These results suggest clinicians should consistently be providing education on depression, anxiety, sleep, and resilience, particularly to female patients, who appear at greater risk for psychological distress.

Categories: Concussion/Mild TBI (Adult)
Keyword 1: concussion/ mild traumatic brain injury
Keyword 2: depression
Keyword 3: anxiety
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51 Impact of Blast Exposures on the Cognitive Abilities of Warfighters

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Objective: There is growing evidence to indicate that blast exposure military personnel experience throughout their career can have a negative impact on their brain health. The majority of research in the area of blast related

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